

REMARKS

The Office Action of April 28, 2008 has been received and carefully reviewed. It is submitted that, by this Amendment, all bases of rejection are traversed and overcome. Upon entry of this Amendment, claims 1-20, 48, 49 and 68-71 remain in the application. Claims 5 and 7-11 have been withdrawn. New claim 72 has been added in order to set forth an additional specific embodiment that the Applicants regard as their invention. Support for this recitation may be found throughout the specification as filed, at least at page 7, lines 12-30. Reconsideration of the claims is respectfully requested.

At the outset, Applicants note that the Examiner states, on page 3 of the Office Action, that, "...if the elected species of claims are not rejected by the prior art, other species will be examined." The Applicants are unclear of the meaning of this statement. The Applicants assume that the Examiner means that if a generic claim (from which the claims directed to a withdrawn species depend) is found to be allowable, then such withdrawn claims will be examined. As such, Applicants respectfully submit that claim 1 is an allowable generic claim, and that claims 5 and 7-11 (directed to withdrawn species) should be considered allowable. It is further submitted that currently withdrawn claims 5 and 7-11 are entitled to consideration. If this interpretation is incorrect, clarification of the Examiner's statement is respectfully requested.

Claims 1-4, 6, 12, 13, 15-20, 48, 49 and 68-71 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Seabaugh et al. (U.S. Patent Publication No. 2003/0027033). The Examiner states that Seabaugh discloses a solid oxide fuel cell including a ceramic electrode upon an electrolyte substrate. The ceramic electrode includes a mixture of two or more components including ionically conducting ceramic electrolyte material and an electrode material powder. The Examiner asserts that the ceramic electrode is "inherently patterned".

At the outset, the Applicants submit that their patterned film includes nanowires. The definition of a nanowire is, "a wire of material, the diameter of which

is less than 100 nm” (see, www.nature.com/nrd/journal/v2/n1/glossary/nrd988_glossary.html). It is submitted that one skilled in the art would be cognizant of the fact that wires generally have 1 dimension (i.e., length) that is longer than another dimension (i.e., diameter).

This is in sharp contrast to the nanoparticles taught by Seabaugh. By definition, a particle is “a body having finite mass and internal structure but negligible dimensions” (see, wordnet.princeton.edu/perl/webwn). Nanoparticles are particles on the nanoscale or less than 100 nm in dimension (see paragraph [0009] of Seabaugh). Nanoparticles are different from nanowires in structure and in the synthesis thereof. For example, a nanowire generally has an aspect ratio that is greater than an aspect ratio of a nanoparticle. As the nanoparticles of Seabaugh are NOT nanowires, and nanowires are, in fact, very different from nanoparticles, it is submitted that Seabaugh neither anticipates nor renders obvious the use of nanowires in his ceramic electrode.

Furthermore, Applicants have revised each of the independent claims to include, in some form, that the patterned film includes insoluble matter of a liquid. Support for this recitation may be found throughout the specification as filed, at least at page 7, lines 12-30.

The Applicants respectfully disagree with the Examiner’s interpretation of Seabaugh. In particular, the Applicants disagree with the Examiner’s conclusion that the ceramic electrode is “inherently patterned”, as the term “patterned” is defined by the Applicants. On page 7 of Applicants’ specification as filed, the patterning process is described. This process results in the patterned film recited in Applicants’ independent claims 1, 48 and 49; as such, the patterned film of Applicants’ claims includes, in addition to the nanowires, any insoluble matter that remains after the patterning process is complete.

Such a patterned film is not taught or even suggested by Seabaugh. Seabaugh teaches that his ceramic electrode includes ceramic electrolyte materials and ceramic electrode materials. Seabaugh also teaches that this mixture may be an electrode coating or an electrode substrate (see paragraph [0020]). When describing

how the mixture is established, Seabaugh explains that inks are prepared with commercial terpinol-based ink vehicle and “circular patterns...were deposited by screen printing...” (see Examples 20-25). These inks, and the methods by which they are established, do not result in a patterned film as the phrase is defined by the Applicants. The inks of Seabaugh form a coating, which includes the vehicle and the mixture, on the particular substrate in a pattern defined by the printing process. In sharp contrast, Applicants’ patterned film includes the insoluble matter and the nanowires established in a pattern defined by an imaging process.

For all the reasons stated above, it is submitted that Applicants’ invention as defined in independent claims 1, 48 and 49, and in those claims depending ultimately therefrom, is not anticipated, taught or rendered obvious by Seabaugh, either alone or in combination, and patentably defines over the art of record.

Claims 1-3, 6, 12-16, 18-20, 48, 49 and 68-71 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Huang et al. (U.S. Patent Publication No. 2002/0098406). The Examiner states that Huang discloses a solid oxide fuel cell including an electrolyte substrate and an electrode including a paste of nano-sized particles of electrocatalytic noble metals and ceramic ionic conducting particles. The Examiner asserts that the paste is “inherently patterned”.

The Applicants again point out that their patterned film includes nanowires. In sharp contrast, Huang teaches the use of nanoparticles in his paste. In light of the above discussion regarding the differences between nanowires and nanoparticles, it is submitted that Huang neither anticipates nor renders obvious the use of nanowires.

The Applicants respectfully disagree with the Examiner’s interpretation of Huang. In particular, the Applicants disagree with the Examiner’s conclusion that the electrode is “inherently patterned”, as the term “patterned” is defined by the Applicants. Reiterating from above, on page 7 of Applicants’ specification as filed, the patterning process is described. This process results in the patterned film recited Applicants’ independent claims 1, 48 and 49. As such, the patterned film of

Applicants' claims includes, in addition to the nanowires, any insoluble matter that remains after the patterning process is complete.

Such a patterned film is not taught or even suggested by Huang. Huang teaches that his electrode includes an electrocatalytic noble metal phase and an ion conducting phase. When describing how the electrode is applied to an electrolyte substrate, Huang explains that screen printing, tape casting, slip casting, vapor deposition, or thermal spraying may be used (see paragraph [0050]). Huang teaches that the electrode paste includes a solvent which is compatible with one or more of the listed deposition techniques. These techniques do not result in a patterned film as the phrase is defined by the Applicants. The paste of Huang forms a coating, which includes the solvent and the particle mixture, on the electrolyte substrate in a pattern defined by one of the listed deposition techniques. In sharp contrast, Applicants' patterned film includes the insoluble matter and the nanowires in a pattern defined by an imaging process.

For all the reasons stated above, it is submitted that Applicants' invention as defined in independent claims 1, 48 and 49, and in those claims depending ultimately therefrom, is not anticipated, taught or rendered obvious by Huang, either alone or in combination, and patentably defines over the art of record.

New claim 72 has been added to recite that the liquid which provides the insoluble matter is a photoresist. It is submitted that neither of the cited references teaches or even suggests the use of such a photoresist. As such, it is submitted that new claim 72 is patentable at least because it depends from claim 1 and because it contains a further limitation not taught or suggested by the prior art of record.

In summary, claims 1-20, 48, 49 and 68-71 remain in the application, and new claim 72 has been added herein. It is submitted that, through this Amendment, Applicants' invention as set forth in these claims is now in a condition suitable for allowance.

Appln. S.N. 10/699,456
Response dated July 28, 2008
Reply to Final Office Action of April 28, 2008
Docket No. 100200584-1
Page 11 of 11

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, the Examiner is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

DIERKER & ASSOCIATES, P.C.

/Julia Church Dierker/

Julia Church Dierker
Attorney for Applicants
Registration No. 33368
(248) 649-9900, ext. 25
juliad@troypatent.com

3331 West Big Beaver Rd., Suite 109
Troy, Michigan 48084-2813
Dated: July 28, 2008
JCD/JRK